

productivity enhance the value of the organization to customers and the DoD.

The difficulty lies in how the output of employees is valued. The product that customers of white-collar, WCF organizations usually purchase is labor hours (h_i). That's the input. The value of those labor hours or *output* to the customer is assumed equal to the cost of those hours, based on the labor rate ($h_i \times r_i$). After adjusting for inflation, the cost of labor does not change appreciably, and the *output over input* ($h_i \times r_i / h_i = r_i$) does not change appreciably, thus leaving perceived productivity relatively flat. The error lies in assuming the value of the output is equal to the cost of the applied labor hours, when in reality the value may be (and better be) much, much more.

So, what the changes in productivity in white-collar, WCF environments are, and more important, what contributes to changes in productivity are mostly unknown to us. The challenge here is to find ways of measuring productivity and to identify those things that most contribute to increased productivity. The table on p. ___ applies to the U.S. economy overall from 1929 to 1982. Imagine if a manager possessed similar knowledge for a WCF organization.



Knowing what things contribute most to increased productivity would allow that manager to allocate resources much more effectively to the ultimate benefit of the organization and the customer.

So, how does one measure productivity and the contributors to productivity in a WCF organization?

The Way Ahead

As with Hilbert a hundred years ago, the challenges presented here are not intended to represent the complete set of challenges facing WCF organizations today and in the future. It's certainly not an exhaustive list. In fact, some of the challenges presented here may be worded incorrectly and may not even be the correct ones, in that the benefit of pursuing a solution is lacking.

But as with Hilbert a hundred years ago, the challenges presented here are intended to provoke thoughtful consideration of where we are, where we could go, and how we might get there. They are intended to provoke us into viewing and treating the economics of the WCF as the legitimate science it is. Solving these six challenges could lead ultimately to some sort of *Unified Field Theory* for the economics of a WCF.

Hilbert challenged mathematicians to think axiomatically, and the results were phenomenal. We should challenge ourselves to do no less. The opportunities for improving financial management appear unlimited, and we should be grateful that these types of challenges exist. After all, as Hilbert said:

"As long as a branch of science offers an abundance of problems, so long is it alive; a lack of problems foreshadows extinction or the cessation of independent development."

May the economics of the WCF thrive!

Editor's Note: The author welcomes questions or comments on this article. Contact him at BreslinDA@navsea.navy.mil.

DoD AWARDS \$45 MILLION TO UNIVERSITIES FOR RESEARCH EQUIPMENT

The Department of Defense (DoD) plans to award \$45 million to academic institutions to support the purchase of research instrumentation. The 209 awards to 102 academic institutions are expected to range from about \$50,000 to \$1 million and average \$213,000. All awards are subject to the successful completion of negotiations between DoD research offices and the academic institutions.

The awards are made under the Defense University Research Instrumentation Program (DURIP). The DURIP supports the purchase of state-of-the-art equipment that augments current capabilities or develops new university capabilities to perform cutting-edge defense research.

The DURIP meets a critical need by enabling DoD-supported university researchers to purchase scientific equipment costing \$50,000 or more. The researchers generally have difficulty purchasing instruments costing that much under research contracts and grants.

This announcement is the result of a merit competition for DURIP funding conducted by four research offices: the Army Research Office, Office of Naval Research, Air Force Office of Scientific Research, and the Advanced Technology Development Directorate of the Missile Defense Agency. The offices solicited proposals from university investigators working in areas of importance to the DoD, such as information technology, remote sensing, propulsion, electronics and electro-optics, advanced materials, and ocean science and engineering. In response to the solicitation, the research offices received 733 proposals requesting \$192 million in support for research equipment.

The complete list of winning proposals is on the Web at <http://www.defenselink.mil/news/Mar2002/d20020320dur.pdf>.

Editor's Note: This information is in the public domain at <http://www.defenselink.mil/news>.